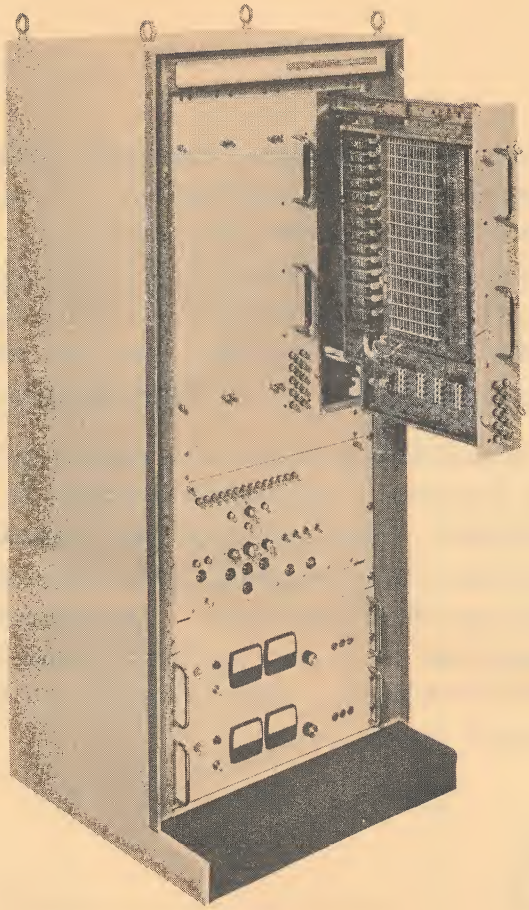
ENGINEERING NOTE

NO. 538-A

electronic memories inc. 12621 Chadron Avenue • Hawthorne, California 90250 • (213) 772-5201



EMI NANOMEMORY HIGH SPEED RANDOM ACCESS CORE MEMORY

SPEED:
- 900 nanosecond cycle time
- 350 nanosecond access time

CAPACITIES:
- 4,096, 8,192 and 16,384 words
- 8 to 84 bits per word

OPERATING TEMPERATURE:
- +10°C to +40°C

POWER REQUIREMENTS:
- 115 VAC, ±10 percent, 60 cycle
- 1600 watts (16,384 words x 70 bits)

PHYSICAL SIZE:
- 19 inches RETMA rack mounted
- 16 inches rack depth
- 38 inches rack height (excluding power supply)

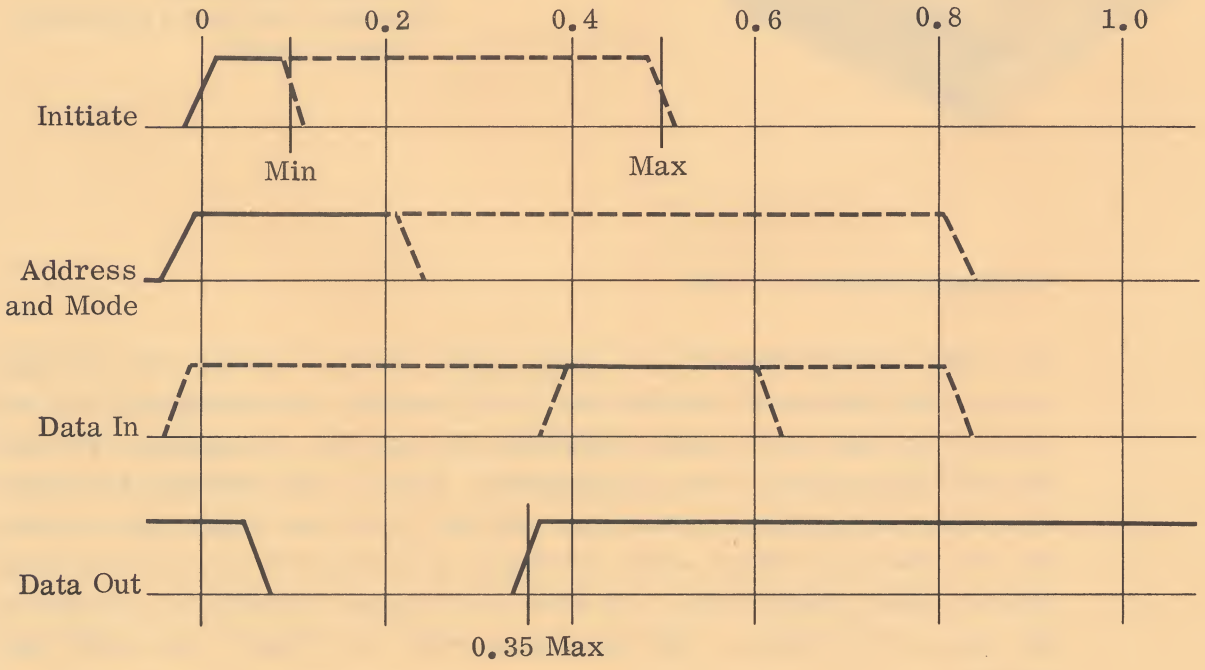
GENERAL DESCRIPTION

The EMI NANOMEMORY is a high speed, large capacity core storage memory for advanced computer and real time data processing applications where very high performance reliability is required. It employs a two and one-half dimensional drive organization. This has the decoding advantage of a three dimensional (coincident current read and write) organization, and the low-cost planar array stringing advantages of a two dimensional (linear select) organization. All drive and sensing circuitry is mounted on the core array frame. All interfacing with the array is done with logic signals.

SPECIAL FEATURES

Maintainability is an important feature in all high speed electronic equipment. The EMI NANOMEMORY includes, as a standard feature, a memory self-test function. The EMI NANOMEMORY can be switched away from processor control to a pre-programmed test routine, which is cycled through the memory. Maintenance routines are quickly performed by varying two adjustments which confirm the system's operating margins. Data and Address Registers are displayed on the front panels of the NANOMEMORY.

The standard interface is compatible with silicon circuitry in a wide variety of standard logical interface control functions. Split-cycle operation is a standard feature of the EMI NANOMEMORY. Other functional logic features are optionally available. General interface circuit characteristics and logical timing and control characteristics are described below. The memory power supply, including voltage margining and power sequencing control, is a standard feature of the EMI NANOMEMORY. Data retention during power turn-on and turn-off is a standard feature.



Interface Signal Characteristics.

EMI NANOMEMORY

TECHNICAL SPECIFICATIONS

CAPACITY:	4,096, 8,192 or 16,384 words 8 to 70 bits per word in 19-inch rack 8 to 84 bits per word in 24-inch rack
MODES OF OPERATION:	Clear/Write Read/Restore Split Cycle
CYCLE TIME:	900 nanosecond Clear/Write or Read/Restore
ACCESS TIME:	350 nanoseconds
INPUT INTERFACE:	
Logical Level	A logical "1" level shall be from +2.0 V to +5 V; a logical "0" level shall be from -0.5 V to +0.5 V. A logical "1" level shall require no current; a logical "0" level shall source 5 ma.
Address	Logical level, settled at leading edge of initiate pulse.
Data	Logical level, settled 400 nanoseconds after leading edge of initiate pulse.
Initiate Pulse	A positive going pulse from the 0 V nominal level. Nominal pulse amplitude shall be 4.0 V ± 1.5 V. Minimum pulse width shall be 50 nanoseconds; maximum pulse width shall be 500 nanoseconds. Pulse widths are defined from the 50 percent point of the leading edge to the 50 percent point of the trailing edge. The initiate pulse starts a memory cycle.
Read Mode	Logical level, when present, causes the initiate pulse to start a read/restore cycle.

INPUT INTERFACE (Continued):

Write Mode	Logical level, when present, causes the initiate pulse to start a clear/write cycle.
Split Cycle	A logical level, when present, causes the initiate pulse to start the first half of a split cycle operation.
Write 2 Pulse	A positive going pulse from the 0 V nominal level. Nominal pulse amplitude shall be 4.0 V ± 1.5 V. Minimum pulse width shall be 50 nanoseconds; maximum pulse width shall be 250 nanoseconds. Write 2 pulse starts the second half of a split cycle operation. Write 2 pulse may occur no sooner than 450 nanoseconds after the leading edge of the initiate pulse.

OUTPUT INTERFACE:

Logical Level	A logical "1" level shall be from +3.2 V to 4.2 V; a logical "0" level shall be from -1.0 V to +0.0 V. A logical "1" level shall be capable of supplying up to 10 ma current; a logical "0" level shall be capable of absorbing up to 10 ma of current.
Data	A logical level, settled 350 nanoseconds after the leading edge of the initiate pulse during a read/restore operation.
Memory Available	A logical level, settled at the "1" logical level indicating that the memory may be accessed.

POWER REQUIREMENTS: 115 VAC ± 10 percent, 60 cycle
1600 watts (16,384 words/70 bits)

ENVIRONMENTAL LIMITS:

Temperature	+10°C to +40°C, ambient
Humidity	0 to 90 percent relative humidity
Cooling	By internal blowers
Size	19 inches RETMA rack mounted 16 inches rack depth; 38 inches rack height excluding power supplies. An additional rack height of 11 inches must be provided for 20-bit power supplies, or 22 inches for up to 84-bit power supplies.

electronic memories inc. 12621 CHADRON AVENUE / HAWTHORNE, CALIFORNIA 90250 / (213) 772-5201 / TWX 910-325-6213

Thank you for your recent inquiry. The information you requested is enclosed. We look forward to supplying you with ferrite memory cores, arrays and stacks, or complete memory systems.

For your convenience, your nearest EMI representative is listed below.

ALABAMA

The Roy Attaway Company
900 Bob Wallace Avenue
Huntsville, Alabama 35801
(205) 534-2811
TWX 205-533-1714

ARIZONA

Southwest Engineering
8341 North 7th Street
Phoenix, Arizona
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CALIFORNIA

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Tech Marketing Association
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FLORIDA

The Roy Attaway Company
51-53 East Robinson Street
Orlando, Florida 32801
(305) 424-9983
TWX 305-841-2607

ILLINOIS

Ropek-Cahill, Inc.
5439 West Division Street
Chicago, Illinois 60651
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MASSACHUSETTS

Electronic Memories, Inc.
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Andover, Massachusetts 01811
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Detroit, Michigan 48219
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Liverpool, New York 13088
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(716) 889-1429

Advanced Components Corporation, Inc.
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Whitesboro, New York 13492
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Advanced Components Corporation, Inc.
R.D. No. 2, Mill Road
Wallkill, New York 12589
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NORTH CAROLINA

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Dayton, Ohio 45403
(513) 253-2151
TWX 513-944-0256

Jay Engineering Company
4712 West 130th Street
Cleveland, Ohio 44135
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WASHINGTON

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